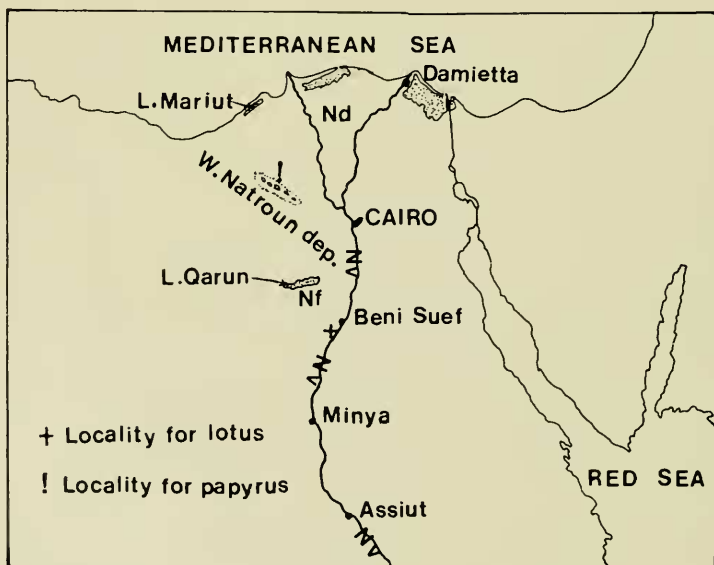


DISTRIBUTION OF *CYPERUS PAPYRUS* L. AND *NYMPHAEA LOTUS* L. IN INLAND WATERS OF EGYPT

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Papyrus, *Cyperus papyrus* L. and *Lotus*, *Nymphaea lotus* L. are among the most well known plants of ancient Egypt (TÄCKHOLM 1969).

It was reported (TÄCKHOLM and DRAR 1950, p. 134) that *Papyrus* has become almost extinct from Egypt more than 150 years earlier. The last traveller to notice it was Baroness v. MINUTOLI, who recorded its growth (1820—21) at Damietta and the banks of lake Manzala (map 1). After her time, no further record was made and the plant was considered extinct. The few specimens cultivated in the gardens of Cairo and Alexandria are of recent introduction, brought to Egypt from Paris in 1872 (TÄCKHOLM et DRAR, 1950: 134).



Map 1

According to ASCHERSON et SCHWEINFURTH (1889), and TÄCKHOLM et al. (1956), Lotus is confined to canals and drains of the Nile delta (Nd) and Faiyum (Nf), both areas belong phytogeographically to the Nile region (N) of Egypt (map 1).

The entire disappearance of papyrus from Egypt, and the restriction of Lotus to the channels of the Nile delta may be related to changed conditions which have become unfavourable to its natural growth.

During the last hundred years, a permanent "Perennial" irrigation system has been introduced and established to replace the classic "Basin" irrigation system known in Egypt since thousands of years. The construction of dams and barrages and the development of a permanent system for irrigation and drainage resulted in the drying-up and shrinkage of numerous ponds and swamps that existed along the Nile and that were associated with the ancient basin irrigation system. Such ponds and swamps were the natural habitat of Papyrus and Lotus of ancient Egypt.

REDISCOVERY OF LOTUS IN UPPER EGYPT

Between 1963—66, during a survey to the weed flora of the cultivated land in Upper Egypt (Nv), the author discovered a stand of *Nymphaea lotus* L. v. *aegyptiaca* TUZS. growing in a small drain running close to, and east of the railways, 3 km south of Beni Suef town (map 1).

Associate species included:

Ceratophyllum demersum L.

Potamogeton crispus L.

The drain banks were lined by the growth of:

Typha australis SCHUM. et THOUNN.

Cyperus articulatus L.

Arundo donax L.

Specimens of Lotus from this locality collected during August 1963 are kept in the Herbarium of the Botany Department, Assiut University.

Lotus is still growing in the same locality, when the author visited this area again in September 1967. This seems to be the only known locality of *Nymphaea lotus* L. in the Nile valley region south of Cairo.

REDISCOVERY OF PAPYRUS IN WADI NATROUN

While carrying out a phytosociologic survey of the vegetation of Wadi Natroun depression (map 1), the author discovered in July 1968 a stand consisting of about 20 plants of *Cyperus papyrus* L. which were growing among other reeds in a fresh water marsh close to Umm Risha lake, the largest soda-lake in Wadi Natroun depression (map 2).

Associate species included:

Scirpus litoralis SCHRAD. var. *subulatus* CHIOV.

Panicum repens L.

Fuirena pubescens (POIR.) KUNTH

Lemna sp.

Samolus valerandi L.

Cyperus laevigatus L.

Berula erecta (HUDS.) COVILLE

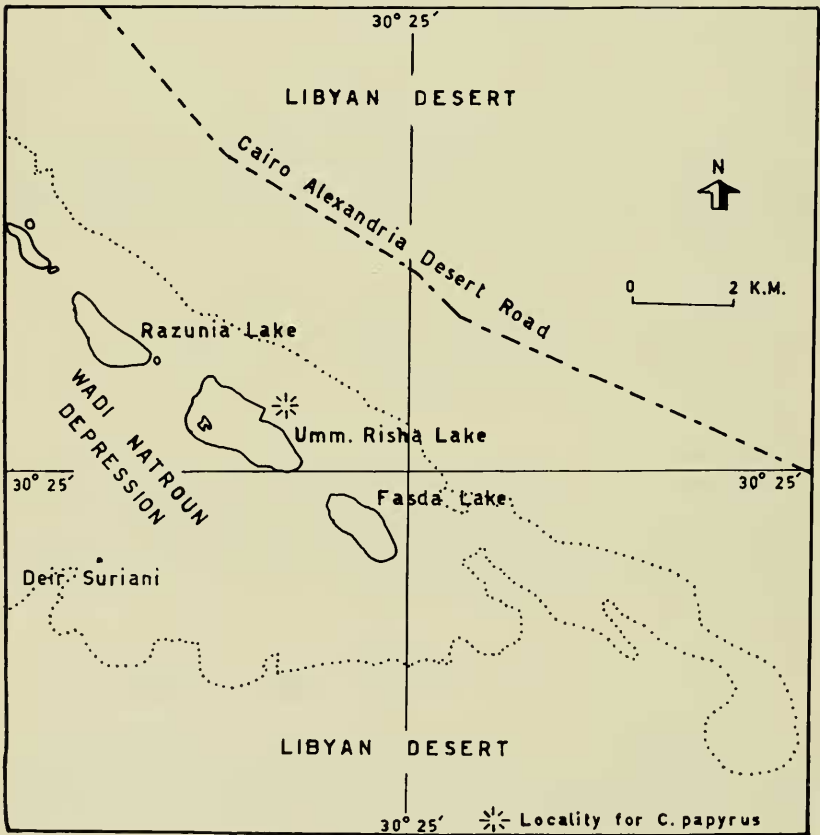
Papyrus plants were found well protected among the reeds:

Typha elephantina ROXB.

Typha australis SCHUM. et THONN.

Phragmites communis (L.) TRIN.

Papyrus is still growing up to the present in the same locality which seems to be the only known locality in Egypt, viz. in North Africa.



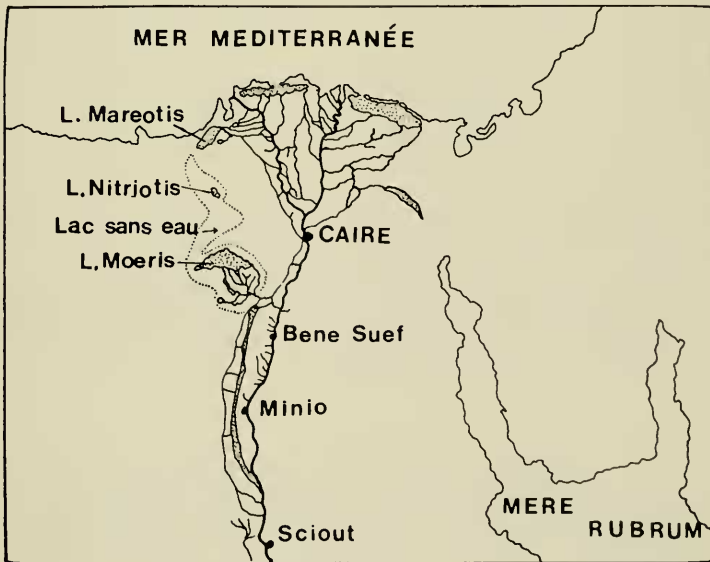
Map 2

DISCUSSION

BUTZER (1959), reviewing the conditions of human environment in Egypt during predynastic (5000 B. C.) and early dynastic times, assumed that the Nile moved across its flood plain in a complicated network of river arms, islands, back-swamps and seasonally inundated alluvial basins. Back-swamps were low-lying depressions harbouring perennial waters that were dominated by marsh vegetation, among which Papyrus and Lotus were the most characteristic elements. Such back-swamps formed a reservoir of game, where fishing parties, fowling, excursions and spear-hunts took place. They did not hamper cultivation, but population pressure forced their drainage and gradual disappearance.

From the 20th Dynasty, there are few inscriptions referring to swamps which compare strikingly with innumerable references to irrigation in its various forms.

BALL (1940), reviewing the ideas of ancient geographers about Egypt, gave a similar picture. Both of the Nile delta and valley were full of swamps and many artificial canals for navigation and irrigation. The lake Moeris (according to Diodorus 50 B. C.) was connected with the Nile by a canal which was 15 km long (map 3). The area of this lake (now lake Qarun, map 1) was comparatively large and it was assumed that this lake and some others were used by the ancient Egyptians to discharge excess waters of high floods.



Map 3

TOUSSOUN (1922), followed changes accompanying the Nile and its branches since the olden times. His series of maps showed a gradual disappearance of the numerous branches of the delta with the result of a more or less dry flood plain. He referred to a certain canal that connected the southern group of lakes and swamps (including Moeris, map 3) with the northern ones (including Mareotis and Nitriotis, map 3). The canal was still existing to the greater part of its length during the French expedition to Egypt (1798 to 1801) and was blocked later by blown sand of the desert.

This idea was also expressed in the map of the french geographer VAUGONDY (published 1753) which includes both of the Faiyum and Wadi Natroun in a depression which is no more full of water (Lac sans eau, or Bahr belo mah "in Arabic").

It seems therefore, that the drying-up of the majority of the lakes and swamps was accompanied by gradual disappearance of certain marsh and water plants, among which were the Papyrus and Lotus.

The locality of *Cyperus papyrus* L. in Wadi Natroun may represent a relic of a dried-up ancient back-swamp system which existed along the western side of the Nile's flood plain. Even the last records of Papyrus at Damietta and Manzala lake may represent another relic of the swamp system which existed throughout the delta and which dried up due to the introduction of a permanent irrigation and drainage systems.

The discovery of Papyrus in Wadi Natroun in the wild state may represent the most northern limit of its recent geographical distribution. The well known Papyrus swamps of South Sicily and probably also those of Palestine are originally derived from Egyptian introductions into these countries (TÄCKHOLM and DRAR 1950, p. 135).

The locality of *Nymphaea lotus* L. south of Beni Suef may represent another relic of an ancient growth in this area, close to, and opposite to the former Lake Moeris. The largest part of this old lake is now represented by the cultivated land of Nile Faiyum (Nf).

ASCHERSON et SCHWEINFURTH (1889), also TÄCKHOLM et al. (1956) report the growth of Lotus in the Faiyum area and describe this area as the only region outside the delta where Lotus is still growing.

It may be pointed, that conditions may have been changed during the last years to unfavour the growth of Lotus in Faiyum region. It is not more observed in this area. The Beni Suef record remains therefore as the southern most record for its distribution in Egypt.

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